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small star is within 2″ of one much brighter than itself; for then the visibility of the small star will chiefly depend on the fine definition of the brighter.

As there are now so many large telescopes, both refractors and reflectors, in existence and in process of manufacture, I hope soon to present to the Society a list of objects most suitable for severely testing their powers of definition, and well situated for observation in this latitude.

Hopefield Observatory, Haddenham, near Thame,
Dec. 10, 1862.

RECENT PUBLICATIONS.

The Earth and its Mechanism; being an Account of the various Proofs of the Rotation of the Earth: with a Description of the Instruments used in the Experimental Demonstrations. To which is added, the Theory of Foucault's Pendulum and Gyroscope. By H. Worms, Esq., F.R.A.S., F.G.S. London, 1862.

The work is intended as a complete collection of the various demonstrations of the Earth's Rotation, and the theorems connected therewith; the principal object being to promulgate a knowledge of the more recent discoveries and experiments relating to this branch of science. Thus particular attention is drawn to Arago's application of Wheatstone's revolving mirror for the measurement of the velocity of light. A minute account is given of the latest experiments on falling bodies, made by Prof. Reich in the mines at Freiberg, in addition to those of Benzenberg and Guglielmini; the phenomena exhibited by Foucault's pendulum and gyroscope are carefully explained, &c. The second part, intended for the perusal of the mathematical student, gives, from Hansen's *Theorie der Pendelbewegung* (Danzig, 1853), with some omissions and additions, an investigation of this dynamical problem of the motion of a pendulum as affected by the rotation of the Earth.

Annals of the Astronomical Observatory of Harvard College, Vol. III., Cambridge (U. S.), 1862.

The volume has the second title, "Account of the Great Comet of 1858, by G. P. Bond, Director of the Observatory of Harvard College."

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The following list of the titles of the several sections will give an idea of the contents of this splendid Monograph of Donati's Comet:—

I. Figure and Position of the Tail.—Comprising the original notes of observation upon the principal tail, between August 14th, 1858, and February 9th, 1859, quoted with full references to the original authorities, and accompanied by remarks indicating the principal points of interest. This section is illustrated by twenty-three engravings, on steel, of the appearance of the Comet to the naked eye, and by eight wood-cuts.

II. Observations upon the Secondary Tails.—The text is illustrated by three wood-cuts, and by the engravings and charts of the naked-eye views.

III. Reduction of Observations upon the Figure and Position of the Tail.—The results of the discussion are exhibited on a series of charts giving the normal outlines of the principal tail on twenty-eight dates, between September 16th and October 17th inclusive, and the axis of the principal secondary tail for seventeen dates.

IV. Probable Errors of Observations upon the Tail.

V. On the Deflexion of the Tail.—Describing a peculiarity in its upper regions during the first and part of the second week in October. Two plates of outlines and a wood-cut accompany the text.

VI. Columnar Structure of the Tail.—Relating to a remarkable feature faintly exhibited in the upper part of the tail.

VII. Reduction of Observations on the Secondary Tails.—The results of this discussion have been entered on the charts, with the outlines of the principal tail.

VIII. The Nucleus and Envelopes.—The original accounts descriptive of the telescopic appearance of the Comet are here quoted in the same form as in Section I. They are accompanied by twenty steel engravings.

IX. On the Outline of the Head of the Comet.—The discussion is illustrated by two plates, showing the normal outlines of the head of the Comet between Sept. 3d and Oct. 18th.

X. On the Branches and Central Darkness of the Tail.—Engravings of nine views of the Comet, 1860, III. are given in this Section.

XI. The Nucleus.—Containing a description of the nucleus, with particular reference to its size and changes of brightness.

XII. The Envelopes.—The various phenomena of the envelopes, their velocity of ascent, the dark and bright spots on their surface, and the question of their rotation or oscillation, are considered in this Section, which is illustrated by a lithographic plate of 138 telescopic views. The Section concludes with a notice of the envelope formation in the

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Comet, 1860, III. and in the great Comet, 1861, II. accompanied by a steel engraving of the former.

XIII. The Outer Faint Veil.—Containing an account of this feature, with a reference to a similar peculiarity in the Comet, 1860, III.

XIV. On the Direction of the Initial Axis of the Tail.

XV. Conclusion.—This Section gives a general summary of the contents of the volume.

The naked-eye and telescopic views of the Comet, shown on a dark ground, are very beautiful specimens of steel engraving.

P. A. Hansen, Darlegung der theoretischen Berechnung der in den Mondtafeln angewandten Störungen; Erste Abhandlung. Leipzig, 1862. (forms part of t. vii. of the *Abhandlungen der mathematisch-physischen Classe der Königlich Sächsischen Gesellschaft der Wissenschaften,* pp. 93–497.)

In this elaborate memoir—the first part of the anxiously expected Theory of Prof. Hansen's Lunar Tables—the perturbations in longitude are completely calculated; but of the perturbations of the latitude and radius vector respectively, only the portion which the author designates as the principal one. The method employed is stated to be with a slight variation that explained in the *Fundamenta Nova Investigationis orbitæ veræ quam Luna perlustrat,* the demonstration of the fundamental formulæ is however given *de novo.* It is hardly necessary to mention that the numerical values of the coefficients are substituted in the first instance in the formulæ, and the multiplications and integrations carried out numerically. The author has compared his values of the perturbations of the longitude with those of Plana and Damoiseau, the differences being in some instances not inconsiderable; but he has not as yet made the comparison with those of Delaunay. At the conclusion of the memoir the author investigates the perturbations which depend on the figure of the Earth, and the mass and figure of the Moon.

Nouvelles Recherches sur la Figure des Atmosphères des Corps Célestes. Par M. Edouard Roche. 4to, Paris, 1862. (Extrait des Mémoires de l'Académie de Montpellier, Section des Sciences, 1862.)

The present Memoir is a sequel to one published in the year 1854. The author, on the suggestion of M. Faye, has